

WATER ALLOCATION PROGRAM DEVELOPMENT

Meeting Proceedings

Thursday, April 24, 2003

1. WELOCME

Mr. Dan Varin, Chairman of the Water Resources Board, welcomed participants. He stated that in February, the group heard a presentation about a proposed development in the Pawcatuck basin. [In an earlier meeting of the WAPAC, the Blackstone and the Pawcatuck watersheds were introduced as two very different watersheds that might offer fact-based scenarios to assist participants in discussing water allocation issues.] Mr. Varin also informed the group that he had participated as a member of the Energy Facilities Siting Board in reviewing the Ocean State Power facility proposal.

Ms. Crawley introduced the panel and described the format for the session. She stated that three panelists would review the City of Woonsocket permit requirements first followed by a presentation by two panelists regarding Ocean State Power's permit requirement.

2. PANEL DISCUSSION: City Of Woonsocket Crookfall Brook Pipeline Project and Ocean State Power

Panel Members: Woonsocket

US Army Corps: Robert DeSista
RI Dept. of Env. Mgt: Alicia Good
Woonsocket Water: Jim Marvel

Panel Members: Ocean State Power

RI Dept. of Env. Mgt.: Russ Chateneauf
Ocean State Power: George Burke

Mr. Jim Marvel Water Division Superintendent, Woonsocket Public Works

Mr. Marvel provided background information on the water system and an overview of the project. The City of Woonsocket is a self-contained system with no interconnects with other Cities. He stated that Woonsocket has a population of approximately 45,000 with 17,000 dwellings and 10,000 service connections –a ratio that reflects the large amount of multifamily housing in the City. He noted that the average per capita water use is low at 53 gallons per person per day.

He referred to a map and described the systems principal source of supply. He explained that the water system consists of two reservoirs (#1 and #3). Reservoir #3 is the main storage reservoir. Typically water flows via a natural stream down to the terminal reservoir which is where the treatment plant intake is located. The upper watershed that contains Reservoir #3 is 3.2 square miles. The lower watershed is 4.7 square miles with a larger drainage area, which supplies more water. To maximize the yield of the system, water is stored Reservoir #3 from October through May to use in the summertime to augment flow in the downstream watershed (Reservoir #1). He noted the major highways (295,146,120) that bisect the lower watershed. In 1991, there was an oil spill at the intersection of Route 146 and 146A, which drain to the lower watershed that goes to the terminal reservoir. At that time, the only way to get water from Reservoir #3 to Reservoir #1 was via an open channel flow through the lower watershed. Contamination from the oil spill was a concern. The oil spill caused the City to

revisit the Crook Fall Brook pipeline project that had been proposed in the 50's. The project proposed a pipeline that would carry water from Reservoir 3 to Reservoir 1. The pipeline project required a wetlands permit because the pipeline would divert water that would no longer flow open channel from June through October.

Mr. Robert DeSista, Chief, Permits and Enforcement, US Army Corps of Engineers explained their permitting process noting that their jurisdiction is related to navigable waterways and inland wetlands. In the early 90's, the City of Woonsocket applied to the Corps of Engineers for a permit for a utility line crossing of wetlands adjacent to Crook Fall Brook. He explained that this is a typical request that they have hundreds of those per month. It involves discharge of fill to wetlands, most often temporary impacts, to construct utility lines. Generally, these requests are processed without much controversy. However, they may involve wetland compensation or mitigation requirements. In their process, they coordinate with other resource agencies. In this particular case, RIDEM and the US Fish and Wildlife Service were the primary agencies. Generally, permit decisions are consistent with the State agency. In this case, the US Fish and Wildlife Service noted that Crook Fall Brook is an important resource and that by diverting water at certain times of the year they were affecting critical wildlife species. Other secondary issues surfaced that were not typical. One involved archeological impacts. The other involved flow. The Corps coordinated the flow issues with the RIDEM. US Fish and Wildlife felt that the RIDEM's requirements were not protective enough and recommended more stringent restrictions on the flow, specifically ABF. Last year because of the drought and at the request of the City, the Corps modified the permit to tie the release requirements to their drought "triggers".

Alicia Good, Asst. Director, RI Dept. of Environmental Mgt., Office of Water Resources Ms. Good stated that the two permit scenarios-Ocean State Power and Woonsocket-are not typical. They were two of the first permits where the agency had to struggle with issues related to withdrawal and flow. While there have been several since then, they are all unique and present challenging substantive issues. She stated that this water allocation process is helpful and that they are learning.

Crookfall Brook was determined to have some significant habitat including Brook Trout and several turtle species. RIDEM had a responsibility to ensure that resource was protected. The original wetlands permit was denied. Through a settlement agreement wetlands issues had been resolved. For the water quantity and flow criteria in the Consent Agreement, RIDEM used the US Fish and Wildlife standard for flow that is necessary to protect fish and wildlife. In this case, Aquatic Base Flow (ABF) was based on a .5 cfs/m per square mile (drainage area x .5) for summer flow and 1 cfs/m per square mile in the winter. RIDEM did not require specific releases from Reservoir #3 from December to May. Historically, Woonsocket did not have to release any water and there was adequate flow and adequate quantities of water to support habitat.

Understanding that the City's purpose for constructing the pipeline was to protect the water supply which was vulnerable to runoff from major highways and given that it was also the City's only water supply, RIDEM added conditions to the permit that would relieve them from those flow releases allowing them instead to pump the water to Reservoir 1. They included a spill or other contamination, drought conditions, water quality at the intake of Reservoir 1 including turbidity and color requirements that were difficult for the City to meet

periodically after heavy rain events. In general, the conditions were intended to balance the need to protect the stream with the need to provide quality drinking water to meet the demands of the City.

She mentioned an interesting issue that arose during the public hearing process. A resident with a shallow private well attended the hearings and expressed concerns about whether their well would go dry. RIDEM questioned whether they had the authority to address the issue of private wells, a question that remains today. She stated that this group may want to explore the private well issue in more detail both in terms of how they are impacted and how they impact future water levels.

Mr. Marvel then described the impact of the required releases and the recent modification to the Army Corps permit due to the recent drought. He restated that a major difference between the Army Corps permit and the RIDEM permit was the requirement for winter releases of water to maintain flow in the Brook. The DEM permit did not require them to make flow releases from Reservoir #3 downstream to the terminal reservoir during the period that that reservoir normally recharges. Thus, there was no operational impact. The Army Corps permit however in applying the Aquatic Base Flow standard on a year round basis led to downstream releases from reservoir 3 which historically had not been required and affected operations. He reviewed a chart (attached) that summarized reservoir levels compared to the levels in 1965 during the drought of record showing the impact that the winter releases combined with the rainfall deficit ultimately had on the system. During the fall and winter months of 2001 and 2002, there was a 20% rainfall deficit on a running basis. In accordance with the original Army Corps permit they were releasing 30 million gallons per month, which doubled to 60 million gallons per month during the wet period. In January, water levels dropped below the drought of record and they were allowed to reduce flow from the 2 mgd to 1 mgd. By April, water levels were 230 mgd short, equivalent to two months storage for the summer months. Winter releases totaled 300 mgd. Without the winter releases the storage reservoir would have been at a level expected with normal rainfall. Because of the required releases the city began the summer months with 750 million gallons in storage- an amount that was 230 million gallons less than the drought of record representing two months of storage

Mr. Marvel stated that the Army Corps was responsive to the City's request for a permit modification that tied release requirements to the system's safe yield and storage levels in the reservoir. The impact on storage was severe as flow releases approached safe yield. Total safe yield of the system is 3.5 mgd (2 mgd on the lower reservoir and 1.5 mgd in the upper reservoir). Other impacts included:

- Higher frequency of public water restrictions
- A \$400,000 (10%) loss in revenue
- Financial costs associated with the permitting process of approximately \$500,000 for the 3 Million project, which also included an archaeological study.
- Increased operating expenses including increased energy needed to pump and treat
- A loss of 1 mgd from safe yield

Total costs associated with permitting and design were \$500,000 for the \$3 Million project.

The archaeological study documenting several Native American fishing villages was nearly as involved as the wetlands impacts study. These costs are typical in the sense that it is reasonable to expect similar sites along rivers and streams.

Russ Chateneauf, Chief RIDEM Groundwater and Wetlands Protection

Ocean State Power is a 500-megawatt plant located just south of Massachusetts. There is no discharge from the cooling process. The intake is located one mile away at Thudermist Dam. They pump water from the Blackstone River to a pond, which stores up to 30 million gallons, 20 of which is usable. They were required to apply for a wetlands permit and a water quality certification permit. Impact of withdrawals was assessed in relation to water quality. The ABF policy for permit review was in effect since 1981 and was used to evaluate the permit request. Key habitat issues included the effect of loss of dissolved oxygen on the temperature of the river, dissolved metals, and changes in the wetted area of the river. OSP proposed withdrawals from the river of 4.4 million gallons per day or approximately 6.8 cfs. This amount represents about one-half of the aquatic base flow (ABF). While the impacts were considered small, studies were required to bear this out. DEM approved the water quality permit in July 1988 with the condition that OSP continuously monitor river levels and cease withdrawals if the river level drops below 7Q10 (102 cfs). OSP also entered into an agreement with the City of Woonsocket to pay for improvements to the Woonsocket Wastewater Treatment Facility and agreements with the two hydroelectric plants to ensure constant flow from the facilities. DEM required additional dissolved oxygen modeling.

For the wetlands permit OSP was required to continuously monitor river flow and cease pumping from the river when levels of 95.2 cfs or less were recorded over a 6-hour average period. Pumping could resume when a level of 102 cfs (7Q10) was attained for 6 hours. For DEM a major question was whether 7Q10 was the proper threshold. OSP is also required to study fish habitats and population and publish an annual report. OSP assessed the feasibility of alternative supplies and flow augmentation settling on a storage pond that held seven days worth of water.

The compliance agreement was amended in 1993 and again in 2001 increasing the cutoff (7Q10) level from 102 to 108.8. In the past 10 years, there have been several occurrences of 7Q10 levels when one would have been expected. In 1999, the level dropped to 46 cfs. Over the last three years OSP trucked water on several occasions including treated water from the Burrillville Wastewater Treatment Facility as approved by DEM. A company in Massachusetts was fined for supplying water from the Blackstone to OSP.

Mr. George Burke, Plant Manager, Ocean State Power (OSP)

Mr. Burke stated that the company has lived by the terms of the permit since 1991. They are a zero discharge facility, which uses river water that must be treated before use. Treatment results in 3-30 yards of sludge per week that must be transported to the landfill. They can draw 4.4 mgd or 3,050 gallons per minute from the river store it in the pond located near Wrights Chicken Farm. The company continually pumps from the river and then from the pond to the facility. The pond holds 32 million gallons of water. However, when the level drops to 10 million gallons they lose suction from the pumps. They rarely take the 4.4 million gallons. In fact, the plant has not drawn any water or run for the last two days. This is because they were not picked up in the electrical market, not because of a water level/ flow issue.

At the time of the permit, OSP was a baseload facility in a regulated market. Now they bid into a competitive market. Any expense to truck water is reflected in the price as an add-on fee. Decisions are made as to whether it is competitive to produce power or more cost effective to shut down operations and sell the fuel. OSP has shut down every odd year except last year due to low flow in the Blackstone.

Discussion

Dr. Hermance asked whether seepage from the pond was an issue for OSP. Mr. Burke replied that the pond was constructed with a liner and French drains. They need high quality water for the process. Treating water to attain the desired quality is costly. Leaks can occur due to the continuous pumping. Water in the drainage system can be used to replenish the pond. Mr. Burke also noted that he watches the precipitation in Massachusetts rather than Rhode Island to determine whether they will have adequate water.

Mr. Johnston asked whether OSP continually monitors conductance and whether that data is available. Mr. Burke responded that they have a digital control system and the information is available at the facility. He noted that they monitor pH and that the system will shut down with low/high conductivity, including during the winter due to salt content. Mr. Mariscal asked whether the levels had increased this year with the higher snowfall. Mr. Burke stated that the flow has increased to offset the increased salt.

Mr. Varin informed the group that the original application presented to the Energy Facilities Siting Board (Board) contained a signed agreement with Providence Water to deliver 4mgd to the plant. The law added Burrillville to the service area. The Board would not approve the application if it included Providence, which prompted the alternate storage pond option. This was similar to the application by Narragansett Electric. They built a pipeline to a 1mgd well in Olneyville and did not obtain water from Providence Water Supply Board. The Board is not likely to allow water for power from rivers or the Providence Water Supply Board. Mr. Abele noted that some facilities in Connecticut and Massachusetts have built facilities that use air cooling processes instead of water- a decision driven by the economics of water cooling as much as regulation.

Mr. O'Brien asked whether riparian rights had been an issue for the Woonsocket permit. Ms. Good responded. While a private well owner in Woonsocket did intervene, and there were notice requirements for the wetlands permit, the focal issue was not riparian rights. It only raised the question of who has the authority over private wells and how they figure in to the permitting process. Mr. O'Brien stated that Connecticut is grappling with this issue. He noted that the market has changed; energy may not be consumed in Rhode Island, which may affect criteria for establishing priority uses. There was discussion about the potential for using wastewater, similar to the Johnston landfill plant. Mr. Burke stated that they would consider this if feasible based upon major quality concerns-solids, conductivity, pH, microorganisms and metals. It was noted that RIDEM would consider wastewater diversions as an impact. In the Blackstone the average daily wastewater flow is 53cfs – a high number.

Ms. Scott asked whether Woonsocket has had to rely on other sources of water like Harris Pond due to the required releases. Mr. Burke stated that they have increased use of Harris Pond even during normal conditions.

Ms. Veeger related the discussion to the water use reporting committee stating that the committee was exploring options for increasing the frequency of reported data without increasing the costs to businesses. Mr. Marvel indicated that they have a regulating valve at the outfall to verify the flat release requirement. Ms. Good indicated that the permitted withdrawals vary. There is no uniformity in the data collection needs. OSP has a continuous monitoring system tied right into RIDEM. Generally, applicants are responsible for monitoring.

Mr. Donahue asked whether the Wastewater Treatment Facility permit was modified because drinking water takes priority or due to flow requirements. Mr. Marvel answered that both were issues. The wastewater treatment releases were not regulated in the winter, which affected safe yield. He stated that the wetlands banking requirement for Route 99 had severe impacts on the system. Color and turbidity issues resulted from runoff.

Mr. Johnston cited a recent USGS study in Massachusetts of median August flows averaging about half of the US Fish & Wildlife Aquatic Base Flow (ABF). In addition, flows were higher in the western part of the state than the east. He stated that the Massachusetts statistics show promise for use in Rhode Island. He questioned whether the [RI] ABF standard was subject to change. Ms. Good stated that currently, ABF is the accepted standard for permits. The applicant has an option of justifying an alternative standard. Mr. Marvel stated that Woonsocket spent hundreds of thousands related to the permitting process. Justifying an alternative standard is cost prohibitive to the applicant. They could not afford to spend additional money on determining what the best standard would be. He added that Crookfall Brook was historically an intermittent stream. Summer flow is an artificial condition created by the dam. Higher flows than those that existed naturally are now required by the permit. Discussion turned again to the complexity of water management and issues of data. Ms. Good noted the need for good information to properly evaluate permit applications. Dr. Hermance asked how RIDEM could reconcile the cuts in funding support to USGS for gages.

Ms. Crawley thanked the participants and panel members for their time and effort. She encouraged participants to continue thinking about the issues and questions raised and to consider how they relate to the various committees. She announced the next meeting date as Thursday, May 29, 2003.

Respectfully Submitted,

Kathleen Crawley
Supervising Planner